Claims:

1. A process for the preparation of aerogels including:

   -the exchange of the liquid phase of the aquagel with xenon;

   -the extraction of xenon and the possible recovery thereof.

2. A process for the preparation of aerogels according to claim 1, including a previous phase of hydrolysis/condensation of the suitable precursor.

3. A process for the preparation of aerogels according to claim 2, where the hydrolysis/condensation reaction is carried out starting from an alkoxyde precursor of the formula:

$$X\text{-}Me(OR)_{n-1}$$

in which Me is a metal belonging to the 3rd, 4th and 5th Groups of the Element Periodic System; n is integer and represents the valence of Me; X is either -OR or -R where -OR is an alkoxyde group and -R is an organic radical linear or branched with a number of carbon atoms up to 10.

4. A process for the preparation of aerogels according to claim 3 where the suitable precursor is preferably tetramethoxysilane, tetraethoxysilane.

5. A process for the preparation of aerogels according to claim 3 where the hydrolysis reaction is accomplished in presence of an acid selected among hydrochloric, nitric or acetic acid.

6. A process for the preparation of aerogels including the exchange of the aquagel liquid phase with xenon according to claim 1 where such an exchange is

accomplished with liquid xenon and the extraction thereof is accomplished under supercritical conditions.

7. A process for the preparation of aerogels according to claim 6 where the exchange of the liquid in the aquagel is carried with liquified xenon at temperature between 0 and 16.6 °C.

8. A process for the preparation of aerogels according to claim 6 where the hypercritical extraction of xenon from the wet gel is carried a temperature higher than 16.6 °C.

9. A process for the preparation of aerogels according to claim 6 where the hypercritical extraction of xenon is carried at a pressure higher than 58.4 bar.

10. A process for the preparation of aerogels including the exchange of the aquagel liquid phase with xenon according to claims 1 and 6 characterized in that it comprises also a xenon recovering phase at the end of the extraction.